Sallen-Key $k=1$

4)
$$\begin{cases} (V_i - V_A)\cdot G_1 = (V_A - V_o)\cdot sC_1 + (V_A - V_o)\cdot G_2 \\ (V_A - V_o)\cdot G_2 = V_o \cdot sC_2 \end{cases}$$

$$V_A = V_o \cdot \frac{sC_2 + G_2}{G_2} \quad //$$

$$V_i G_1 - V_o \cdot \frac{G_1(sC_2+G_2)}{G_2} = V_o \cdot \frac{sC_1(sC_2+G_2)}{G_2} - V_o sC_1 + V_o \frac{G_2(sC_2+G_2)}{G_2} - V_o G_2$$

$$V_i G_1 = V_o \cdot \frac{sC_1(sC_2+G_2) - G_2 sC_1 + G_2(sC_2+G_2) - G_2^2 + G_1(sC_2+G_2)}{G_2}$$

$$V_i \cdot G_1 = V_o \cdot \frac{s^2C_1C_2 + sC_1G_2 - sC_1G_2 + G_2sC_2 + G_2^2 - G_2^2 + G_1sC_2 + G_1G_2}{G_2}$$

$$\frac{V_o}{V_i} = \frac{G_1G_2}{s^2C_1C_2 + sC_2(G_1+G_2) + G_1G_2}$$

$$\frac{V_o}{V_i} = \frac{1}{s^2C_1C_2R_1R_2 + sC_2(G_1+G_2) + 1}$$

$$T(s) = \frac{V_o}{V_i} = \frac{\frac{1}{C_1C_2R_1R_2}}{s^2 + s\left(\frac{1}{R_2C_1} + \frac{1}{R_1C_1}\right) + \frac{1}{C_1C_2R_1R_2}}$$

$$T(s) = \frac{15}{s^3 + 6s^2 + 15s + 15} \Rightarrow T(s) = \frac{2,32}{s + 2,32} \cdot \frac{2,54^2}{s^2 + \frac{2,545}{0,69}s + 2,54^2} \quad //$$

$$T(s) = \frac{\frac{1}{C_3R_3}}{s + \frac{1}{C_3R_3}} \cdot \frac{\frac{1}{C_1C_2R_1R_2}}{s^2 + s\left(\frac{1}{R_2C_1} + \frac{1}{R_1C_1}\right) + \frac{1}{C_1C_2R_1R_2}} \quad //$$

$$W_{o_2}^2 = \frac{1}{C_1C_2R_1R_2} \Rightarrow R_1 = 1\Omega \Rightarrow W_{o_2}^2 C_2 = \frac{1}{R_2C_1} \Rightarrow \text{tomo } C_2 = 1F \Rightarrow W_{o_2}^2 = \frac{1}{R_2C_1} \Rightarrow R_2 = 0,43\Omega \quad //$$

$$\frac{W_{o_2}}{Q} = \frac{1}{R_2C_1} + \frac{1}{R_1C_1} \Rightarrow \frac{2,54}{0,69} = 2,54^2 + \frac{1}{R_1C_1} \Rightarrow C_1 = \left[\left(\frac{2,54}{0,69} - 2,54^2\right)\cdot 1\right]^{-1} \Rightarrow C_1 = 0,365 \quad //$$

$$W_{o_1} = \frac{1}{C_3R_3} \Rightarrow 2,32 = \frac{1}{C_3R_3} \Rightarrow R_3 = 1\Omega \Rightarrow C_3 = 0,43F \quad //$$